

High Power Laser Beam Expander **BEHP** RoHS Catalog Code W3211

These laser beam expanders are designed for use with a high-power laser. It supports a broader wavelength range than the current models. It can be used in an optical system with high precision, such as a laser interferometer and processing by the lens design that takes into account the wavefront aberration.

- The optical design of the beam expander is an air gap configuration that does not use an adhesive to bond the lenses. This allows the beam expander to be used with a high-power laser.
- It is designed and coated to enable to use in a broader wavelength range than the current models.
- By turning the diopter ring that is attached to the center of the beam expander, you can make variable beams such as the focused beam, collimated beam, and the divergent beam. It is used when you want to vary the position of the beam waist and if strict collimation adjustment is necessary.



Common Specifications	
Material	Synthetic fused silica
Housing Material	Aluminum
Housing Finish	Black Anodized
Incident angle	$\pm 0^\circ$
Pointing	<0.5mrad (Reference value)

Guide

- ▶ We provide the laser beam expander holders (KLH-BE) for optical axis adjustment of the laser beam expander.
[WEB Reference](#) Catalog Code W4147

Attention

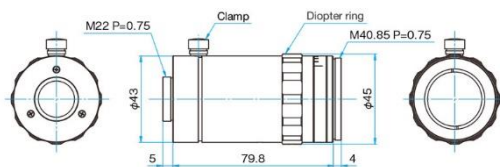
- ▶ The laser energy density at small aperture(output aperture) will become higher than LIDT when reducing the beam diameter and the Beam expander might be broken.
- ▶ It may not be able to obtain the expected function when the beam expander is used in the opposite direction (reducing the beam diameter). Please refer the technical note of he laser beam expander for details.



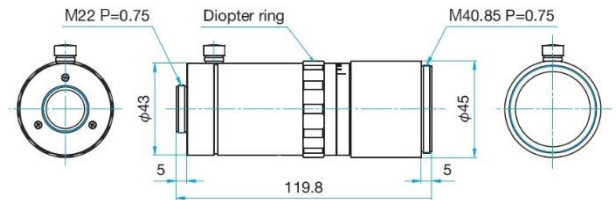
Outline Drawing

(in: mm)

BEHP-1.5/-2/-3



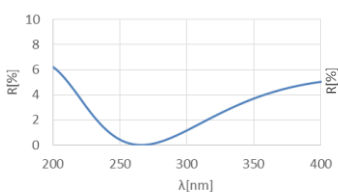
BEHP-4/-5/-6/-7/-8/-9/-10



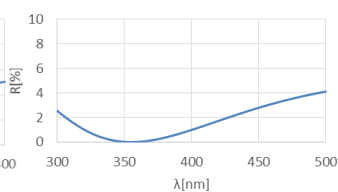
Typical Reflectance Data (Reference data)

R: Reflectance per surface

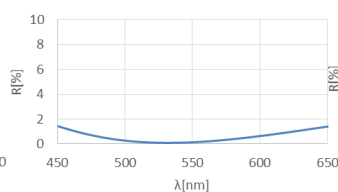
BEHP-250/280



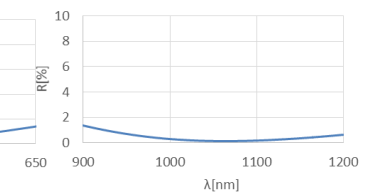
BEHP-340/380



BEHP-500/570



BEHP-1030/1100



Specifications (magnification)						
Part Number	Beam magnification [×]	Output aperture diameter [mm]	Input Clear aperture [mm]	Effective incident beam diameter at incident angle ± 1° [mm]	Transmitted wavefront distortion* ³ (P-V)	Weight [kg]
BEHP-1.5	1.5	φ 26	φ 11	φ 6	< λ/10 (design value for input dia. of 6mm.) Reference <λ/4 (input beam dia. 6mm, 632.8nm)	0.25
BEHP-2	2	φ 26	φ 10	φ 6	< λ/10 (design value for input dia. of 6mm.) Reference <λ/4 (input beam dia. 6mm, 632.8nm)	0.21
BEHP-3	3	φ 26	φ 8	φ 6	< λ/10 (design value for input dia. of 6mm.) Reference <λ/4 (input beam dia. 6mm, 632.8nm)	0.21
BEHP-4	4	φ 35	φ 6	φ 6	< λ/10 (design value for input dia. of 6mm.) Reference <λ/4 (input beam dia. 6mm, 632.8nm)	0.27
BEHP-5	5	φ 35	φ 5	φ 5	< λ/10 (design value for input dia. of 5mm.) Reference <λ/4 (input beam dia. 5mm, 632.8nm)	0.27
BEHP-6	6	φ 35	φ 4	φ 4	< λ/10 (design value for input dia. of 4mm.) Reference <λ/4 (input beam dia. 4mm, 632.8nm)	0.27
BEHP-7	7	φ 35	φ 3	φ 3	< λ/10 (design value for input dia. of 3mm.) Reference <λ/4 (input beam dia. 3mm, 632.8nm)	0.27
BEHP-8	8	φ 35	φ 3	φ 3	< λ/10 (design value for input dia. of 3mm.) Reference <λ/4 (input beam dia. 3mm, 632.8nm)	0.27
BEHP-9	9	φ 35	φ 2.5	φ 2.5	< λ/10 (design value for input dia. of 2.5mm.) Reference <λ/4 (input beam dia. 2.5mm, 632.8nm)	0.27
BEHP-10	10	φ 35	φ 2	φ 2	< λ/10 (design value for input dia. of 2mm.) Reference <λ/4 (input beam dia. 2mm, 632.8nm)	0.27

*3 Transmitted wavefront distortion is design value and not guaranteed. Transmitted wavefront distortion is not measured at the design wavelength.

Specifications (wavelength range)				
Part Number	Design wavelength [nm]	AR coating wavelengths [nm]	Transmittance (AR coat calculated value)* ² [%]	Laser Damage Threshold* ¹ [J/cm ²]
BEHP-1.5~3-250/280	250-266	250-280	>99% (266nm), >97% (257.5nm) >97% (250-280nm), >65% (600-700nm)	2
BEHP-1.5~3-340/380	340-355	340-380	>99% (355nm), >97% (343.3nm) >97% (340-380nm), >65% (600-700nm)	4
BEHP-1.5~3-500/570	500-532	500-570	>99% (532nm), >98% (515nm) >98% (500-570nm), >65% (600-700nm)	5
BEHP-1.5~3-1030/1100	1030-1064	1030-1100	>99% (1064nm), >98% (1030nm) >98% (1030-1100nm), >65% (600-700nm)	7
BEHP-4~10-250/280	250-266	250-280	>98% (266nm), >96% (257.5nm) >96% (250-280nm), >53% (600-700nm)	4
BEHP-4~10-340/380	340-355	340-380	>98% (355nm), >96% (343.3nm) >96% (340-380nm), >53% (600-700nm)	4
BEHP-4~10-500/570	500-532	500-570	>98% (532nm), >97% (515nm) >97% (500-570nm), >53% (600-700nm)	7
BEHP-4~10-1030/1100	1030-1064	1030-1100	>98% (1064nm), >97% (1030nm) >97% (1030-1100nm), >53% (600-700nm)	10

*1 Laser pulse width ; 10ns, Repetition frequency ; 20Hz

*2 The transmittance of the beam expander differs depending on the wavelength and/or input beam diameter

Price list				
\ Wavelength Magnification \	BEHP-1.5~3-250/280	BEHP-1.5~3-340/380	BEHP-1.5~3-500/570	BEHP-1.5~3-1030/1100
BEHP-1.5	BEHP-1.5-250/280	BEHP-1.5-340/380	BEHP-1.5-500/570	BEHP-1.5-1030/1100
BEHP-2	BEHP-2-250/280	BEHP-2-340/380	BEHP-2-500/570	BEHP-2-1030/1100
BEHP-3	BEHP-3-250/280	BEHP-3-340/380	BEHP-3-500/570	BEHP-3-1030/1100
\ Wavelength Magnification \	BEHP-4~10-250/280	BEHP-4~10-340/380	BEHP-4~10-500/570	BEHP-4~10-1030/1100
BEHP-4	BEHP-4-250/280	BEHP-4-340/380	BEHP-4-500/570	BEHP-4-1030/1100
BEHP-5	BEHP-5-250/280	BEHP-5-340/380	BEHP-5-500/570	BEHP-5-1030/1100
BEHP-6	BEHP-6-250/280	BEHP-6-340/380	BEHP-6-500/570	BEHP-6-1030/1100
BEHP-7	BEHP-7-250/280	BEHP-7-340/380	BEHP-7-500/570	BEHP-7-1030/1100
BEHP-8	BEHP-8-250/280	BEHP-8-340/380	BEHP-8-500/570	BEHP-8-1030/1100
BEHP-9	BEHP-9-250/280	BEHP-9-340/380	BEHP-9-500/570	BEHP-9-1030/1100
BEHP-10	BEHP-10-250/280	BEHP-10-340/380	BEHP-10-500/570	BEHP-10-1030/1100

High-Power Zoom Laser Beam Expander

BEZHP

RoHS

Catalog Code

W3225

It is high-power zoom Laser beam expander.

It supports a broader wavelength range than the current models.

It can be used in an optical system with high precision, such as a laser interferometer and processing by the lens design that takes into account the wavefront aberration.

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- It is designed and coated to enable to use in a broader wavelength range than the current models.
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Guide

- ▶ We provide the laser beam expander holders (KLH-BE) for optical axis adjustment of the laser beam expander.

[WEB Reference](#) [Catalog Code](#) W4147

Attention

- ▶ The laser energy density at small aperture(output aperture) will become higher than LIDT when reducing the beam diameter and the Beam expander might be broken.
- ▶ It may not be able to obtain the expected function when the beam expander is used in the opposite direction (reducing the beam diameter). Please refer the technical note of the laser beam expander for details.

Common Specifications

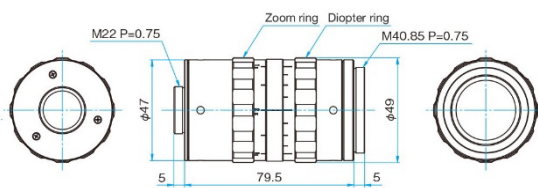
Material	Synthetic fused silica
Housing Material	Aluminum
Housing Finish	Black Anodized
Incident angle	$\pm 0^\circ$
Pointing	$< 0.5\text{mrad}$ (Reference value)



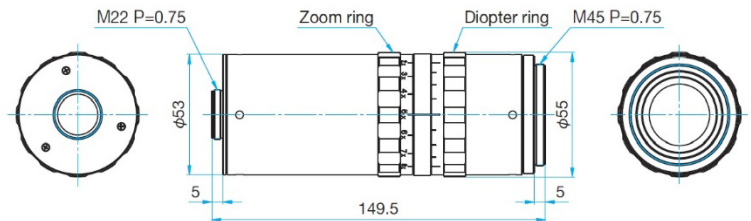
Outline Drawing

(in: mm)

BEZHP-1/3



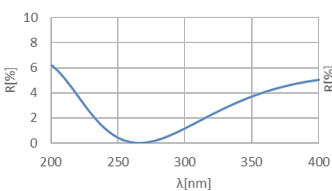
BEZHP-2/8



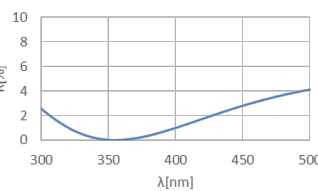
Typical Reflectance Data (Reference data)

R: Reflectance per surface

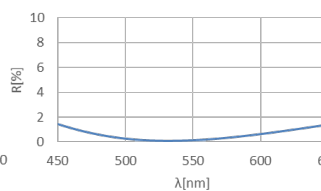
BEZHP-250/280



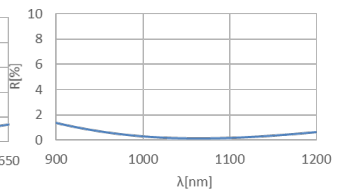
BEZHP-340/380



BEZHP-500/570



BEZHP-1030/1100



Specifications (magnification)					
Part Number	Beam magnification [x]	Output aperture diameter [mm]	Input Clear aperture [mm]	Transmitted wavefront distortion* ³ (P-V)	Weight [kg]
BEZHP-1/3	1 - 3	φ 25	φ 6mm (1x-3x) Max φ 14mm (1x)	< λ/7 (design value for input dia. of 5mm.) Reference <λ/4 (input beam dia. 4mm, magnification 3x, 632.8nm)	0.21
-250/280	2 - 8	φ 27	φ 3mm (2x-8x) Max φ 10mm (2x)	< λ/7 (design value for input dia. of 3mm or 2mm for 8x magnification.) Reference <λ/4 (input beam dia. 4mm, magnification 3x, 632.8nm)	0.47
-340/380				< λ/7 (design value for input dia. of 3mm or 2mm for 8x magnification.) Reference <λ/4 (input beam dia. 4mm, magnification 3x, 632.8nm)	
-500/570				< λ/7 (design value for input dia. of 4mm or 2mm for 7x magnification.) Reference <λ/4 (input beam dia. 4mm, magnification 3x, 632.8nm)	
-1030/1100				< λ/7 (design value for input dia. of 4mm or 3mm for 7x magnification.) Reference <λ/4 (input beam dia. 4mm, magnification 3x, 632.8nm)	

*3 Transmitted wavefront distortion is design value and not guaranteed. Transmitted wavefront distortion is not measured at the design wavelength.

Specifications (wavelength range)				
Part Number	Design wavelength [nm]	AR coating wavelengths [nm]	Transmittance (AR coat calculated value)* ² [%]	Laser Damage Threshold* ¹ [J/cm ²]
BEZHP-1/3-250/280	250-266	250-280	>98% (266nm), >94% (257.5nm) >94% (250-280nm), >43% (600-700nm)	2
BEZHP-1/3-340/380	340-355	340-380	>98% (355nm), >94% (343.3nm) >94% (340-380nm), >43% (600-700nm)	4
BEZHP-1/3-500/570	500-532	500-570	>98% (532nm), >96% (515nm) >96% (500-570nm), >43% (600-700nm)	5
BEZHP-1/3-1030/1100	1030-1064	1030-1100	>98% (1064nm), >96% (1030nm) >96% (1030-1100nm), >43% (600-700nm)	7
BEZHP-2/8-250/280	250-266	250-280	>98% (266nm), >94% (257.5nm) >94% (250-280nm), >43% (600-700nm)	4
BEZHP-2/8-340/380	340-355	340-380	>98% (355nm), >94% (343.3nm) >94% (340-380nm), >43% (600-700nm)	4
BEZHP-2/8-500/570	500-532	500-570	>98% (532nm), >96% (515nm) >96% (500-570nm), >43% (600-700nm)	7
BEZHP-2/8-1030/1100	1030-1064	1030-1100	>98% (1064nm), >96% (1030nm) >96% (1030-1100nm), >43% (600-700nm)	10

*1 Laser pulse width ; 10ns , Repetition frequency ; 20Hz

*2 The transmittance of the beam expander differs depending on the wavelength and/or input beam diameter.

Holder for laser beam expander



KLH-BE

Dedicated holder for laser beam expander
Adjust angle of output beam and center of brightness distribution.

▶ [WEB Reference](#) **Catalog Code** **W4147**